

NETTS Project/Demonstration Summary

Title: siteLAB Analytical Test Kit UVF-3100A

NCBC -53-00

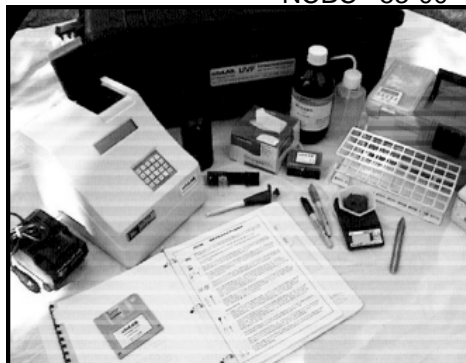
Lead PI/Affiliation: SiteLAB Corp.

Co-PI's/Affiliations: EPA NERL
TestraTech

Date/Duration:

Initiated – 12/99

Completed - 9/01



Introduction: This demonstration was conducted as part of the EPA Superfund Innovative Technology Evaluation (SITE) Monitoring and Measurement Technology (MMT) Program at Port Hueneme in June 2000. The purpose of the demonstration is to evaluate innovative field measurement devices for TPH in soil in order to determine whether they are more efficient or cost-effective than conventional off-site laboratory measurement methods. Although the off-site laboratory measurement methods currently being used meet most TPH measurement requirements, new field measurement devices may be faster and easier to operate and less expensive.

Abstract: These innovative technologies are demonstrated under field conditions, and the results are compiled, evaluated, published, and disseminated by the EPA ORD. Field analysis was conducted at the NETTS, Port Hueneme CA. With soil core, samples taken at Port Hueneme, Kelley AFB, and a Petroleum Site in Indiana. The UVF-3100A, a quantitative device developed by siteLAB Corp., is based on ultraviolet fluorescence spectroscopy. The portable fluorometer is fitted with excitation and emission filters that are appropriate for TPH analysis of soil samples. SiteLAB has developed and provides software that can be used to manage and present data generated by the UVF-3100A. The device uses a mercury vapor lamp with a predominant emission of 254-nm wavelength as its light source. Light from the lamp is directed through an excitation filter of 254nm before it irradiates a sample extract held in a quartz cuvette. Depending on the analysis being conducted, the fluorometer is fitted with an appropriate emission filter.

The device can be used to measure petroleum fuel products. Because aromatic hydrocarbons fluoresce when they are excited by ultraviolet light, the fluorometer can measure their concentrations. Aliphatic hydrocarbons do not fluoresce, therefore, the fluorometer cannot quantify aliphatic hydrocarbon concentrations. However, siteLAB software can estimate aliphatic hydrocarbon fractions and individual PAH or BTEX concentrations by generating response factors based on aromatic and aliphatic hydrocarbon ratios for two to five site specific samples that are sent to an off-site laboratory for GC analysis.

Results/Conclusions: New Start

Publications: